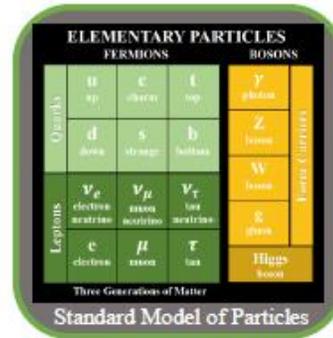
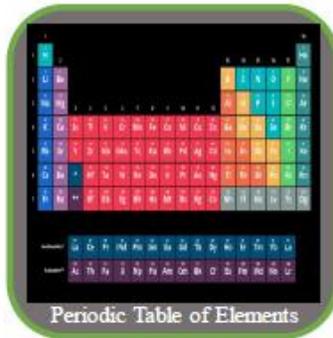


What is a particle family?

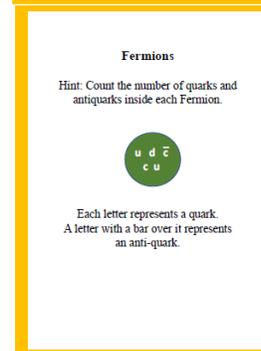
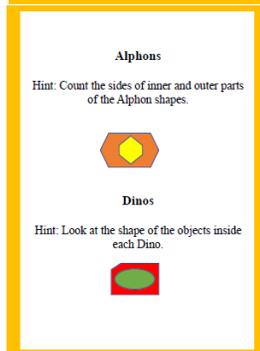
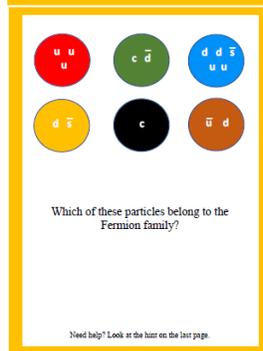
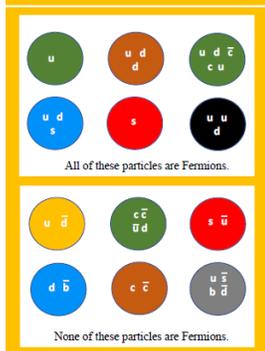
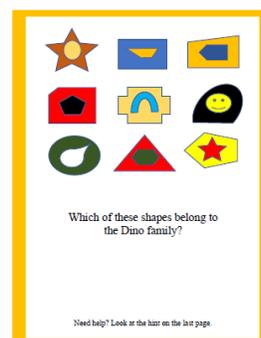
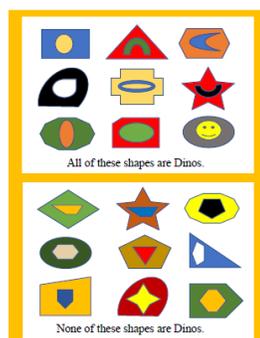
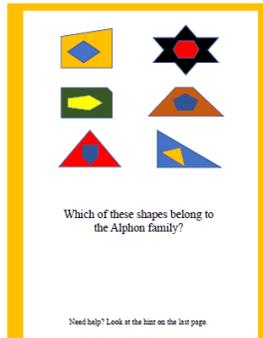
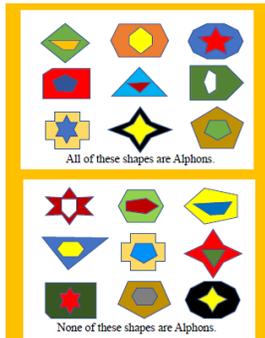
Science often begins by grouping things based on the patterns they share. Zoologists classify animals so that tigers and cheetahs end up in the family of cats. Chemical elements are grouped in the periodic table according to their chemical properties and atomic number. Physicists group fundamental particles—the basic building blocks of matter—based on their properties too. All particles are either fermions or bosons. Fermions make up all ordinary matter. Fermilab scientists study particles to find out their similarities and differences.



Materials: Color art paper (5–6 sheets), poster boards (3)

Activity: Cut shapes as shown in the diagrams below. Combine shapes according to the pictures and create alphons, dinos, fermions and other family members. Use cardboards and arrange them in families as shown in the diagrams. Try to find patterns in each family and answer questions in the diagrams. Use the hints from the answer key to check your answers. Now, create your own alphons, dinos and fermions, and add them to the family album.

Questions to ask: What pattern do you find in the alphons family? What is the shared property in the dinos family? What pattern do you find in the fermions family?



Useful links: https://ed.fnal.gov/lsc_exhibits/list.html
<https://www.liveworksheets.com/id/qc40964ni>